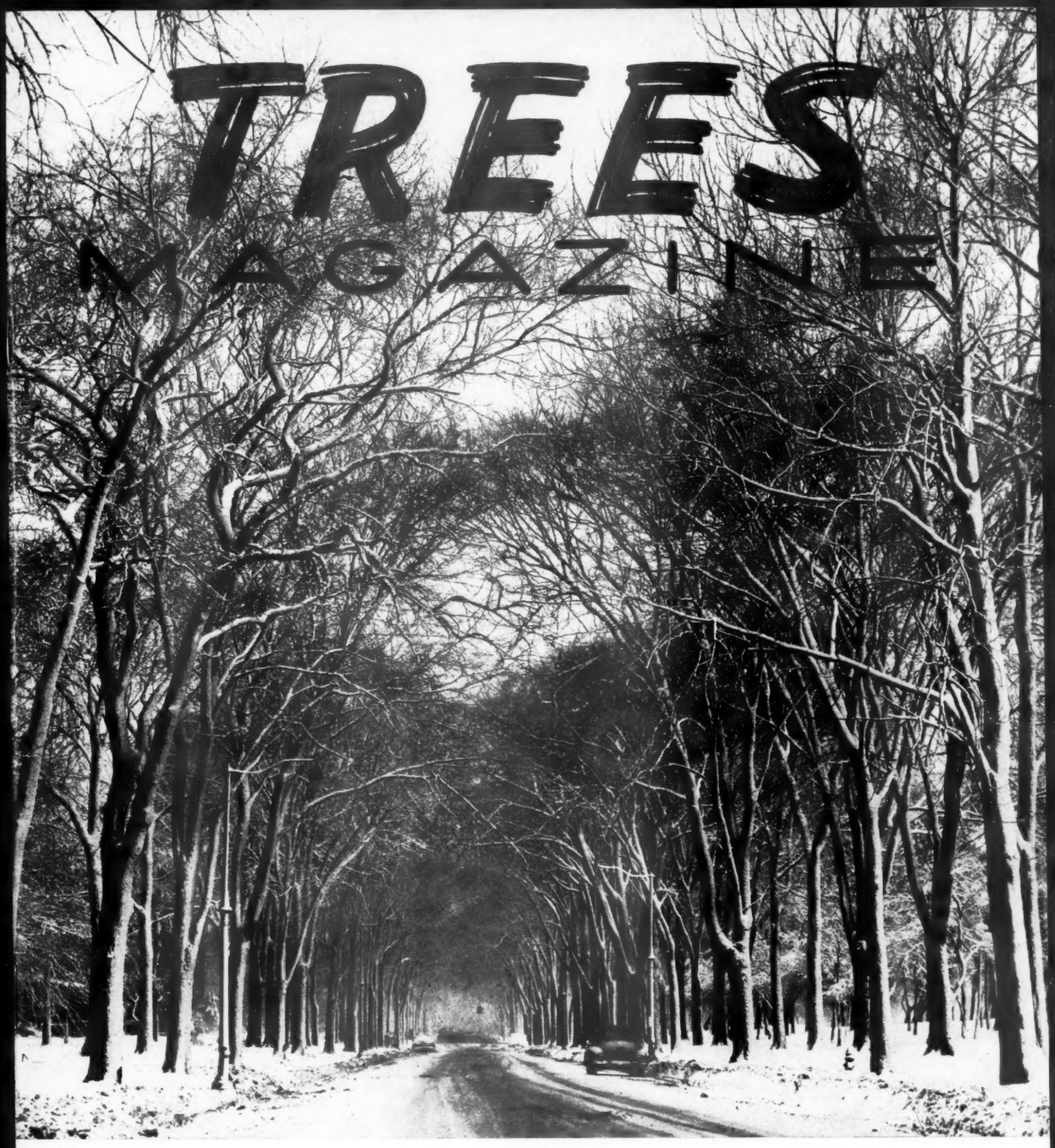
TREES MAGAZINE



America's Elms Need Care—Not Tears

Photo Courtesy Cleveland Division of Shade Trees

A Merry Xmas and a Happy New Year To All

Propagation of Shade Trees — ***F. L. O'Rourke***

Small Trees Needed on City Streets — ***Jos. A. Sweeney***

Nov. - Dec., 1949 *The Journal of American Arboriculture* Vol. 10—No. 1

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TREES Magazine is a bi-monthly Journal published at Cleveland, Ohio, by Edward H. Scanlon, and is devoted to the furtherance of the technical and business administration of Trees (Street and Ornamental); Parks (Municipal and National); and Forests (State, National and Private), in the U. S. Scanlon Publishing Co., P. O. Box 5607, Cleveland, Ohio. Subscription by mail $2 per year; outside United States, $2.50. Advertising rates upon inquiry. Closing date for advertising copy—10th of month preceding date of issue. Unsolicited manuscripts must be accompanied by return postage.

ALONG THE WAY With . . . EDW. SCANLON

■ What DO YOU THINK of starting the winter SHORT COURSE AND OHIO CHAPTER (N.S.T.C.) meeting in Columbus on SUNDAY AFTERNOON. Tentative dates ARE JAN. 23-25 in Columbus. SUNDAY WOULD BE THE 22nd. Drop Dr. L. C. CHADWICK, Ohio State Univ., Columbus, A LINE.

■ *For the OFFICIAL RECORD I shook the MOTH BALLS out of the OLD FAITHFUL ELECTRIC BLANKET OCTOBER 14. Brother THAT'S COMFORT. As a friend of mine said tho "I'VE GOT TO GET RID OF THAT THING — I HATE TO GET UP in the MORNING — and can't GET HOME SOON ENOUGH to hop in THE SACK."*

■ WANTED—By the EDITOR OF TREES MAGAZINE, one copy each of the 6th, 7th and 8th proceedings of the NATIONAL SHADE TREE CONFERENCE. To finish out a COMPLETE SET. Will trade BUCK ROGERS or DICK TRACY books, or remit in U. S. SPECIE.

■ *When you call LOUIE CHADWICK PROFESSOR from now on, YOU AIN'T KIDDING. Just recently made a FULL Professor of Horticulture — NO WISE CRACKS.*

■ The FALL COLOR around WORCESTER, MASS., and PROVIDENCE RYE was gorgeous in ITS INTENSITY ABOUT OCT. 28. Especially the RED AND PIN OAKS. They were A RUBY RED — have never seen OAKS SO BREATHLESS.

■ *Took a NICE TOUR around WORCESTER with HERMAN ADAMS, PARK SUPER. Did you know that the FIRST LAND PURCHASED FOR PARK PURPOSES was in WORCESTER — that's pronounced like WOOSTER, OHIO, for you UN-YANKEES OF THE PLAINS—Franklin Park is THE PLACE. The BEAUTIFUL BLACK WALNUT DESK, solid, in HERMANS OFFICE was made from a tree FELLED IN THE '38 HURRICANE.*

■ ED CONNELL, always ON THE BALL with suggestions, COMES UP WITH A LULU for the SYRACUSE N.S.T.C. MEETING. A contest to select "MISS SHADE TREE FOR 1950." Just a FAINT THOUGHT on what the CORNY NEWSPAPERS would do to that IS SOMETHING. Of course KUEMMERLING and KENEALY would BE THE JUDGES.

■ *Does ANYONE KNOW where I CAN GET some SEED of the HORNBEAM MAPLE — Acer carpinifolium — IT'S A LOVELY SMALL TREE that should make an EXCELLENT STREET and SMALL YARD TREE. I'll EVEN BUY the seed if I can GET ABOUT A POUND.*

■ MERRY XMAS and A HAPPY NEW YEAR and BOYS ARE WE going to have a MESS OF SNOW this winter or my NAME isn't JOE DOAKES. So far I THINK WE'VE had darn NEAR AS much as LAST WINTER — but anyway MERRY XMAS.

■ *What about PICTURES AND DESCRIPTIONS of NICE SMALL SPECIES of trees growing in YOUR AREA. City STREETS and SMALL YARDS are badly in need of a "NEW DEAL" in the matter of a WIDER SELECTION of species TO AFFORD. A DEPARTURE from the "traditional" ELMS, SILVER MAPLES, etc. which have proven SO UNDESIRABLE and out-of-scale.*

■ An INTERESTING letter from PAUL BOYER of COLUMBUS, GEORGIA, is reproduced in the "ARBORISTS CLINIC." If anyone in that OR AN ADJACENT AREA has seen suspicious signs of OAK DECLINE let us know. It may help in the STUDIES OF OAK WILT — of which you READ ABOUT IN THE LAST issue.

■ *CHARLIE McWEENEY, CITY FORESTER of PROVIDENCE, R. I., is the STATE CHAIRMAN of the NATIONAL ARBOR DAY COMMITTEE. Hope you other RHODE ISLANDERS will give CHARLIE a hand when the ACT IS PRESENTED to the LEGISLATURE IN JANUARY to get R. I. in line with the EIGHT OTHER STATES that have LEGALLY ADOPTED the "LAST FRIDAY IN APRIL" as Arbor Day.*

■ H. M. "VAN" VAN WORMER the MOST FAMOUS ARBORIST in Virginia (if you OTHER LADS down there READ THIS I'll explain later IN PERSON) is presenting a NATIONAL ARBOR DAY ACT — the "LAST FRIDAY IN APRIL" — in January to the STATE LEGISLATURE.

■ *EIGHT STATES are now in the "GREEN-up AMERICA" columns with their ARBOR DAY LEGALLY SET as the "LAST FRIDAY IN APRIL" — Massachusetts, Maine, Connecticut, New Jersey, Indiana, Illinois, South Dakota, Nevada.*

■ RIGHT NOW the NATIONAL ARBOR DAY slogan GREEN-up AMERICA is very *APROPOS because ITS GETTING AW*FULLY WHITE around here — SOMEBODY DO SOMETHING!

■ *AS USUAL I am LONG OVERDUE in answering my friend R. C. McMILLAN, DIRECTOR OF PARKS in MANCHESTER, ENGLAND. He is going IN FOR CHAIN SAWS, and an EXTENSIVE STREET TREE PROGRAM. Doesn't NEED TO SPRAY, fumes from FACTORIES keep CATERPILLARS AWAY. Smoke didn't SEEM TO DO ANY GOOD here, or maybe our CATERPILLARS ARE JUST TOUGH.*

■ The MORRIS ARBORETUM BULLETIN (4-10) has an INTERESTING STORY AND PIC of an unidentified SPECIES OF AESCULUS. Should make a FINE PARK TREE. I wonder WHY the DOUBLE FLOWERING, FRUITLESS variety BAUMANI is NOT AVAILABLE. It is a BEAUTIFUL TREE with no MESSY FRUIT.

■ *The "KANSAS GARDENER" has a note on CALENDULA AS A FLAVORING. The FRESH LEAVES can be USED FOR SPRING GREENS, while the FRESH FLOWERS may be added to PUDDINGS AND CUSTARDS.*

■ The NATIONAL SHADE TREE CONFERENCE have appointed a committee TO WORK on the SELECTION OF DIFFERENT SPECIES and NEW VARIETIES of TREES for use on CITY STREETS AND IN SMALL YARDS. The committee WILL BE KNOWN as the ARBORETUM COMMITTEE. Names of the CHAIRMEN and MEMBERS will be PUBLISHED NEXT ISSUE.

■ *If YOU CHANGE, or HAVE CHANGED your address LET US IN ON IT so your COPY OF TREES won't go GALLOPING ALL over the U. S. of A.*

■ Did YOU NOTICE how the IRISH TOOK OVER the front cover — O'ROURKE AND SWEENEY—both GOOD ARTICLES, don't MISS THEM.

■ *Heard that JOE DIETRICH of GREENWICH, CONN., was ON THE SHELF for a while. HOW YOU DOING JOE? Why don't you CHECK IN MORE OFTEN?*

■ The WINTER MEETING of the CONN. TREE PROTECTIVE ASSOCIATION ran into, HOTEL TROUBLE and have been UNABLE TO SET THE DATE. The meeting IS USUALLY held during the LATTER PART OF JAN. JOHNNY WOODRUFF (764 Waterville St., Waterbury), WILL SEND NOTICES.

■ *From NEWSPAPER reports LOS ANGELENOS are BEING CHEATED of their PLACE IN THE SUN by the MURDEROUS SMOG being VOMITED into the air (WHICH IS SUPPOSED TO BE EVERYONE'S) by the CORRUPT VULTURES intent only on turning a CORRODED BUCK.*

■ DOES ANYONE KNOW of a SOURCE of about 500 ENGLISH OR SCOTCH ELM, straight 6'-8' about 1-INCH DIAMETER. Let me know PLEASE—urgent—PRICE IF POSSIBLE.

■ *Had a PLEASURABLE MEETING with DR. A. J. D'AILLY, BURGOMASTER of AMSTERDAM, HOLLAND—in Cleveland for the meeting of the AMERICAN MUNICIPAL ASSOCIATION — with MAYOR THOMAS A. BURKE of CLEVELAND and MAYOR D'AILLY we FORMALLY CELEBRATED the PLANTING of the FIRST BUISMAN (Dutch elm disease-resistant) ELM, for ORNAMENTAL PURPOSES, in AMERICA. The TREE 6'-8' WELL BRANCHED was GRAFTED TWO YEARS on CHINESE ELM. Botanically it is ULMUS CARPINIFOLIA, VAR: BUISMAN.*

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Vol. 10 Bi-Monthly No. 1

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TREES MAGAZINE
Box 5607, Cleveland, Ohio

The Editors of TREES invite discussions, comments and all types of literary materials pertaining to trees and tree preservation from any person engaged either in the scientific advancement or commercial development of the field.

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GREEN-up AMERICA

November-December, 1949 **Journal of the National Arborist Association** Vol. 10—No. 1

EDWARD H. SCANLON, Editor
Box 5607, Cleveland, Ohio
Phone ORchard 0341

"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; *a country without trees is hopeless*"

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Out on a Limb

TREES OPENS TENTH VOLUME

It doesn't seem like a long time, but ten volumes of a magazine is normally ten years, with TREES it required twelve years, counting time out for the late war, and twelve years is quite a chunk of time. Then, too, in pursuing a subject, such as trees, which is so vital to the welfare of nations and people, is not considered very important, so one does not accumulate scads of cabbage. The same effort and energy put into the publication of such a thing as "The Tales of Breakwater Bessie" would probably have, by this time, found the editor lounging at the Roney-Plaza or the Royal Hawaiian getting sunburned naturally instead of leaving it up to a sunlamp, which does little else but feed the kitty of the Peoples Graft & Extortion Co.'s (west coasters' name for the Pacific Gas & Electric) and thereby further deplete the scanty wad of cabbage.

How about trading places with the corruption peddlers? No—we feel that somehow or other the stories and messages that have been, and will continue to be sent out, thru this medium have contributed a little to better living and have increased the capacity of many arborists to do a better job of caring for God's grandest creation.

As we look at the little stack of magazines that have accumulated since Vol. 1, No. 1 had its birthday in Santa Monica, December 1st, 1937, we can't help but think of all the fine conscientious fellows who have helped so nobly by their contributions of scientific and technical articles so that we might all profit and become better tree men. Also there have been many firms who have by their advertising support made possible the dissemination of the world of tree material that has gone out for the edification of those who were wise enough to learn from the valuable data that has been supplied.

So we look ahead with the same pleasure and satisfaction that has attended our adventures with trees and our relations with tree men. Trees are fascinating and tree men aren't the worst guys in the world.

OHIO NURSERY RESEARCH

A short time ago the Research Committee of the Ohio Nurserymen's Association released the results of the project for this year. It contained working data on eight problems. The project is run at Ohio State University under the direction of Dr. L. C. Chadwick, Professor Alex Laurie and Everett Janne.

The results, for 1949, which the committee studied at a recent meeting covered the following problems: (1) The Effect of Various Storage Temperatures and Post Storage Treatments on the Survival of Roses; (2) Quick Freezing Dormant Rose Plants; (3) Pre-Storage Pruning—Its Effect on the Growth and Survival of Hybrid Tea Roses; (4) Bur-

lap Preservatives; (5) Fungicidal Studies on Chrysanthemums for the Purpose of Retaining Basal Leaves; (6) Heeling-in Nursery Stock, (which is reproduced on page 14 of this issue); (7) Materials Used in Constructing Beds and Frames; (8) Cold Storage Studies on Pyrethrum Plants.

There is considerable data of practical value to the nurseryman in these studies and the Ohio Nurserymen's Association is to be congratulated on its vision in underwriting such a program. These data are made available to all contributors to the Research Fund, chairman of which is John D. Siebenthaler, Dayton, Ohio. Mr. Siebenthaler is appealing for additional contributors and nurserymen are urged to contact him for details of the project.

Lightning Clipper

Seymour Smith & Son, Inc., Oakville, Conn., makers of fine garden tools since 1850, now offer an entirely new type of hedge shear, known as "Lightning Clipper" No. A54-9. Instead of the conventional angular-shaped blades, the blades of this shear are of relatively even width throughout with point of oval contour, giving it a distinctive appearance and adding to the strength.

Season's Greetings
and
Best Wishes
For A
Happy and Prosperous
New Year

Arborist Supply Co., Inc.
Rye, N. Y.

New Compressor

The P. K. Lindsay Company of Everett, Mass., announces a new heavier duty compressor which they call their Model 33.

The Model 33 has a displacement of 50 C.F.M. and delivers 33 C.F.M. at maximum recommended speed. Working pressure is adjustable to 100 pounds. Multiple air chambers give adequate cooling and eliminate pulsations, and automatic unloading ensures economy. A two-cylinder gasoline engine develops 11 h.p. at normal speed and provides ample smooth power. An adjustable speed governor enables the operator to vary the capacity to the work being done.

Electric starter and generator are available as optional factory installations.

Square Trees

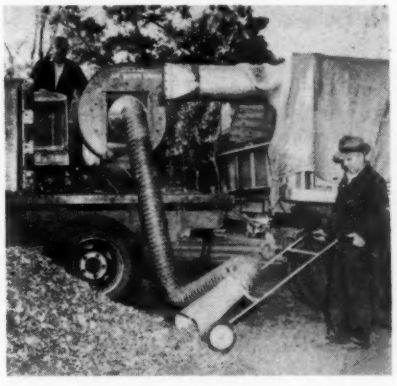
Dear Editor:

On page 10 of Vol. 9-6, Sept.-Oct., 1949, TREES, I note the reference to Father A. D. Frenay and his square trees in Panama. Your story, however, is not complete. Father Frenay wrote me about these trees, but having no botanical information concerning them their exact identification was impossible. But upon writing to Paul H. Allen, for years our representative in Panama and with whom various of us have spent pleasant interludes in Panama, it was possible to ascertain the exact specimen number of various of Allen's collections of this tree in Cocle. All proved to be *Quararibea*, of the Bombacaceae, with more than one species represented. The collections have not been finally worked over, but possibly represented are *Q. pterocalyx, Q. platyphyllas, Q. darienensis and Q. cordata.* Mr. Allen deserves credit for his amazing remembrance of the Panama flora.

Sincerely,
Robert W. Schery,
Missouri Botanical Garden

SPRAYER IS AMBIDEXTROUS—

The Boston Park Dept. has converted their Stewart Air-Mist Sprayers to Leaf Pickers for Fall and Spring operations. The machines are saving the city untold dollars in labor costs, and have been pronounced a success by Paul J. Carrigan, superintendent of trees for the park department. Boston was the first city to adapt the blowers to this use. The Stewart Sprayer Sales Co. has since supplied the attachment to many other Stewart users.



FOR SALE

1949 John Bean "ROTOMIST" sprayer and duster. Purchased in April and used a total of 98 hours. Mounted on 1947 Ford two-ton truck, in perfect condition. "ROTOMIST" and truck look like brand new. Because of health will sacrifice for quick sale.

COMMERCIAL SPRAY & DUSTING CO.
P. O. Box 108
Phone 6991 Napoleon, Ohio

See the bit pictured above? This is a lag bit. We have been unable to get these since before the war, and have been sending out solid-center bits as substitutes and as a result have been cussed from coast to coast. However, we are now able to supply the real lag bit, single twist, like a ship auger, in sizes 5, 7 and 9 sixteenths, and we are very happy about it.

Fruit Growers of Chester County, Inc.
West Chester, Pa.

Trees...

Propagation of Shade Trees

By F. L. O'Rourke
Department of Horticulture,
Michigan State College
East Lansing

Shade trees should be selected trees. They have been chosen to fulfill a definite purpose and to fit in a special site. This site may be broad and extensive or it may be narrow and cramped; it may be low and wet or it may be high and drouthy; it may be in the lee of a building or it may be exposed to the full blast of the elements; but wherever or whatever it is, it needs a specially designed tree to fulfill all its requirements.

No longer should we be content merely to choose any one species, because it has been proven that the individual trees within a species vary widely in their characteristics and that even seedlings produced from a single tree will result in many aberrations in form, colors, growth habit, and site adaptability.

Keen-eyed plantsmen, arborists, park and arboretum personnel should be continually on the outlook for individual trees which show superior characters or are of such a form that they will fit in an unusual site. It is then the function of the plant propagator to produce these outstanding trees in quantity and to make them available to plantsmen everywhere.

In the entire biological world, in both the plant and the animal kingdoms, those species which are the more simple and primitive in structure reproduce abundantly and without difficulty, while the more complex and highly-evolved organisms multiply much less readily and often with great difficulty. Shade trees, being very near the top of the phylogenetic heap, thus may be classed as difficult to propagate.

It has been indicated above that many seedlings will not resemble the parent tree from which the seed is taken, but even if one is so fortunate as to secure seed from a homozygous strain or geographical race of trees, there are still many vicissitudes which may prevent successful propagation. The production of blossom buds, which are usually produced the season preceding that in which the seeds ripen, is often dependent upon a goodly supply of mineral nutrients, water, and light. Good seed is rarely produced under conditions of poor soil, lack of moisture, or intense shade.

Pollination offers problems all its own. Dichogamy, the condition in which the pistillate and staminate parts of the flowers mature at different times, is quite common with many species of shade trees. Self-unfruitfulness, in which the embryo may not be fertilized by pollen from the same tree, is also common. Cold, wet weather at blooming time often prevents cross-pollination by discouraging bees and weighting down normally light, windborne pollen. Embryo abortion, insect and disease attack, drought, and other hazards may prevent the maturity of the seed.

(Right) Two year growth of Globehead elm (Ulmus carpinifolia umbraculifera) from bark graft. (Below) Inserting scions in skin grafting of Globehead elm.

Photos courtesy Cleveland Division of Shade Trees

Even with good seed at his disposal, the problems of the propagator do not cease. Practically all tree seed is subject to "delayed germination" and must go through an "after-ripening" process in order to germinate successfully. Hard seed coats, impermeability to water or to oxygen, an undeveloped or an immature embryo may contribute to their retardation in germination. With some seed the after-ripening requirements are satisfied by a 30- to 60-day period in a damp medium at low temperature (32°F to 50°F), while with other seed there is need of alternating periods of relatively low and high temperature before a normal seedling is produced. Some tree species have what the propagator terms "two-year seeds" in which

(Continued on page 20)

Construction of Mist Blower Equipment

(Prepared by Connecticut Agricultural Experiment Station in Consultation with the Bureau of Entomology and Plant Quarantine)

By S. F. Potts

(Continued from Last Issue)

Meters: Some means of measuring and regulating the quantity of spray material delivered per minute, per tree or per given area, or per given distances of travel is helpful. Hence, there is a definite need for one or more of three types of meters—a flow meter, a time (dial) meter, and a distance or low speed speedometer to measure rates of travel between 0 and 6 miles per hour.

Nozzles: Nozzles must be capable of delivering any kind of mixture at appropriate rates in drop sizes having a mass average diameter of 35 to 60 (average 45 microns), or a numerical average diameter of 25 to 50 microns. Clogging must be avoided or reduced to a minimum. This involves clean tanks and suitable strainers in the line immediately back of the nozzles, the absence of whorl grooves in the nozzles, and the use of nozzle orifices of at least 1/16 inch in diameter when applying abrasive suspensions and viscous oils and emulsions. At pressures greater than 15 p.s.i. it is necessary to use hardened steel nozzles when applying concentrates containing abrasives like sulfur and wettable DDT. At high pressures hardened nozzles should be employed regardless of the mixture dispersed. The whirljet type nozzles with female, ⅛ inch pipe connection, has been fairly satisfactory at pressures of 30 to 100 p.s.i. The direct pressure nozzles must be placed inside of the air blast in such a way as to distribute the mist throughout the air stress. Oil burner nozzles with fine screens and small (.01 to .03 inch) orifices are satisfactory for applying thin, light oils and emulsions but will clog with suspensions.

The optimum number of direct pressure nozzles to install on nozzle manifolds varies with the diameter of the air outlet, the nozzle output (g.p.m.), and the number of air outlets. For single outlets of less than 5 inches in diameter usually a single nozzle is pointed against the air blast or at right angles to it. In the case of multiple small outlets, one direct pressure nozzle per outlet may be installed. For a single 12 inch outlet the use of four nozzles at right angles to the air blast is satisfactory. For applying some of the heavy suspensions and straight, heavy oils at low temperatures a nozzle with 3/32 or ⅛ inch orifice was pointed against the air blast and placed in the center of the outlet. Placing the nozzles outside of the air blast or pointing them in the same direction as the air stream results in too coarse atomization.

The hollow jet type of nozzle requires higher air velocity for atomization than direct pressure nozzles. For outlets of 1, 2, 4, and 12 inches or greater in diameter air velocities of 250, 225, 180, and 150 miles per hour respectively are needed for fine atomization with these air velocity type nozzles. Particle size can be changed by changing the direction of the jets in relation to the direction of the air blast. Two sizes of tube orifices (1/16″ and 3/32″) are usually used. They are sharpened at their free ends to increase shearing action. For outlets of 1, 1½, 2, 4 and 12 inches in diameter the number of tubes to use is approximately 3, 4, 5, 6, and 8 respectively. The liquid pressure applied was usually 3 to 6 p.s.i. The number of hollow jets can be reduced somewhat as the size of orifice is increased. Provision can be made for shutting off any number of tubes present to reduce output.

Mounting: For shade tree and mosquito work the machine is usually mounted on a truck with wide tires to reduce damage to lawns.

Lighting: A good spot light can be mounted on the rotating outlet heads for night work.

Communication: A throat microphone is also a very useful attachment, for communication between operator and driver. The throat microphone costs less than 10 dollars. It consists of ear phones, four 1½ volt dry batteries, a rubber covered, two-strand wire, and throat microphone.

Some means of injecting dust in the air streams is also useful to serve as a tracer for determining wind direction, and its effect on distance or height attained by the air stream.

Orchard Equipment

The foregoing discussion has been concerned primarily with shade tree and broadcast types of equipment. For orchard equipment the general engineering principles are similar to that for shade tree work, but some variations in adaptations, design, and method of operation. The small machines are more like the shade tree machines, in that they may be operated by two men and may be provided with rotating, flexible *single* or multiple outlets. In general they deliver higher air velocities than large rigs. The big machines may be operated by one man and may be able to simultaneously cover all parts of the tree, including lower leaf surfaces, when spraying from one side or from both sides of the machine. Hence, a wide spread of spray must be effected at the machine and there must be enough drive to carry the mist to the top centers of the trees, while delivering a "soft" air stream to the lower portions Air velocities of 125 m.p.h. or greater may damage the fruit and lack sufficient spread when delivered through round outlets of 10 inches or more in diameter. Hence, for this type of machine some sort of spreader is required, as those consisting of 3 or 4 round outlets of 6 to 7.5 inches in diameter. The included angle for spread of air stream should be about 50 degrees. The included angle can be changed by turning the outlet. The use of slot or fish-tail outlets with vanes is the most familiar way of spreading the air. For some time, this method may be the most popular one, although it is the most wasteful of power and air. One spreader method that has worked successfully employs two separate fans on the same shaft to deliver 125 m.p.h. or more of air through two, 4 by 24 inch, adjustable fish-tail outlets. One of the outlets drives the air from a low position on the machine to the lower two-thirds of the tree, while the other outlet delivers from a higher position to the top center of the tree. It may develop that this upper outlet should be a flexible round one and capable of directing spray forward or backward of the machine.

In any case, the atomizing system should be such as to fill the air stress without delivering too much mixture. Moreover, it is preferable if the operator can change at will the velocity, volume, and spread of air without changing drop size. For the large machine, at least, this feature may require the use of a small, auxiliary high velocity (250 to 300 m.p.h.) blower with multiple outlets to atomize the spray to a given drop size irrespective of the air velocity from the big, low velocity (50 to 80 m.p.h.), high volume fan.

Orchard rigs should be streamlined so as to pass freely through close tree plantings. Usually, they should be trailer-mounted, and flexible so as to reduce wastage of material. At least 3 different sizes will be required to take care of all sizes of orchards.

It may be a year or two before suitable and adequate concentrate and spray-dust equipment is available for commercial orchards.

Trees...

Why I Like The Elm

By Orville W. Spicer
President, F. A. Bartlett Tree Expert Company
Stamford, Conn.

(Ulmus Americana)

When nature evolved the trees it created a queen. Man took a look at its lofty crown and named it the American or white elm (Ulmus americana).

It is the finest, most graceful tree in North America.

It is beautiful in all seasons. It is winter now and from the picture window of our home the elm by our door looks prettier than ever. Its great arching arms silhouetted against the wintry sky seem like protecting sentinels. They ward off icy blasts, break the sheets of driving sleet and seem to soften the falling snow. The slender pendulous branchlets are myriad lines of beauty when the afternoon sun dips and sinks on the other side.

Then when the first warm breath of spring steals up from the south the elm by the door will stir itself. Soon it will be covered with minute yellow flowers. The elm is my timeless harbinger of spring. It is my Farmer's Almanac.

When summer comes the elm will be a fountain of green, bursting its dark greenery over the verdant green beneath.

Autumn will come with its riotous colors. There will be oranges and scarlets, russets and browns. But the elm is a sedate queen. Dressed in delicate tints of yellow, it lets the other trees parade their deeper colors, confident of its supremacy in beauty the year around.

No other tree has been woven more closely in the warp and woof of American history than the elm. The early Colonists fell in love with it. A sapling easily transplanted, it soon was planted along the streets and on the village greens of our New England towns.

When the pioneers moved westward to the mountains and the plains, they took the elm with them. The legacy of the grand old elms of New England is a heritage spread across our land. Where-

(Continued on page 21)

Photo courtesy Cleveland Division of Shade Trees

Small Trees Needed On City Streets

By Joseph A. Sweeney
City Forester, Toledo, Ohio

I took a job as a city forester because I had worked with trees for some years and thought that I knew something about them. Now, after three years, I find that I know little that is positive about street trees. I can find and get lots of information on diseases, insects, pruning, removing and all the other phases of city forestry but nothing definite seems to be available about the core of the whole thing—the street trees themselves.

People will tell you about Elms, Maples, Oaks, Planes and other large growing trees. We have them, thousands of them, but what are we going to do with them? They rub the buildings, break the drives and walks, grass will not grow under them and in ice and wind storms they break down and destroy service wires and property. Instead of an asset they are a serious liability. This may sound like treason but in how many cities today can this statement be regarded as false.

Very few cities in this country have coddled their trees or given them much care or thought. Now the towns have reached the age where time has caught up with the trees. Where is the money coming from to remove the accumulation of large dead and dangerous trees? In a city of any great size the money can not be reckoned in thousands of dollars but in millions of dollars.

(Above) Spring planting 1949 of Globe-head elms (U. carpinifolia umbraculifera) on Shaker Blvd., Cleveland, O. Trees top worked in spring of 1947. (R. to L.) Herman Faulhammer, Ray Bryant, and Walter Hemlock, Cleveland Div. of Shade Trees.

(Left) A 15 year old Globe-head elm in Rockford, Ill. A 2" tree at the time of planting, it now measures 10" DBH—Spread 21' — Height 22' never pruned. — Photo courtesy John J. Conery.

The larger the tree the more it costs for upkeep and for removal. This is a trite statement but it goes to the bottom of the trouble. It shows that the use of smaller, much smaller, street trees must be the important factor in whittling down the present excessive costs to a point where the average city can afford to have street trees and to care for them in the right way.

The most intelligent way to select plant materials for any given site is to go over that area and similar areas and see what plants are doing the best and look happy in their surroundings. If not enough plants are found to fill the needs it will be necessary to experiment with those that are deemed to have good potentialities and find out if they meet the required standards.

I have searched the city of Toledo to

find out what plant materials we can use to take the place of the present conglomeration of large growing street trees and now have a list that surprises me in more ways than one. Certain requirements are set up that a plant must meet before it is eligible for the list of street trees. It does not have to have all the listed qualities but it must have a majority of them.

The bulk of the necessary requirements can be listed under five headings:

1. Hardiness.
2. Ultimate height.
3. Shape.
4. Looks.
5. Base development.

1. *Hardiness.*

This is a basic factor. A street tree must have the ability to withstand the lowest cold of winter and the highest heat of summer. It must have the vigor to grow under the difficult conditions found along city streets. Lists must be worked out for the various parts of the city with the most important factor being the amount of gas and soot present.

Little has been done to lengthen the list of trees that will grow where gas and soot abound and much experimentation will be necessary. Probably some of the plants that find a place on such a list will suprise many of us. I am surprised at times to find hickories and other plants growing and thriving in places where one thinks they should not even be able to live.

Soil has some bearing with us but it is not so important as out in the undisturbed countryside. In a city most soils along the streets are poor as far as trees are concerned. Zoning is a great help in long range plans as it gives a clue to future land use.

I have a feeling that today it is harder to plant and get trees going in downtown areas than it was years ago. In downtown Toledo one can see thrifty large trees while the same kind planted in late years are having a hard time to survive. Sugar maples have disappeared downtown but look progressively better as we go out from the older parts of the city.

2. *Size.*

This is a basic factor. I think that the use of large growing trees should be confined to wide boulevards and parks.

The most depressing feature of city forestry is to have to look at the accumulation of large dead and dangerous trees and wonder where the money is coming from to remove them. We have to endure the mistakes that were made in the past but we should not continue them. Instead, we should profit by these mistakes and resolve to try and put an end to the planting of large, tall and wide spreading trees along the general run of city streets.

The public does not demand the planting of large growing trees along city streets. On two wide streets in and adjacent to Toledo the street trees are Purpleleaved Plums and Flowering Cherries and the people are proud of them. They are not good street trees but they are small trees, The people who want large growing trees plant them on their own property and are responsible for them. The city should thank the real estate men who developed these streets and pray that their kind become a great legion.

I think that trees that grow to over forty feet in height should not be planted on the general run of city streets. Forty feet should be the ultimate height with the bulk of the plantings being of lesser stature. Trees of this size will fit a city's pocketbook. They will also help to give a city a brighter and cleaner appearance by allowing a better development of lawns, foundation plantings and flower beds.

3. *Shape.*

In Toledo, and probably in a majority of towns, most lot owners insist upon having at least one tree in front of his property. It is common to find two and even three trees in front of block after block of thirty-five foot lots. In most cases even one of these ordinary trees to a lot would make the spacing too close.

Many of the lot owners now realize what is wrong but they still wish to have one tree they can call their own. As a city forester I think that I should respect this desire and fit it into a plan that is fair both to lot owner and to the city as a whole.

The solution is simple. Use smaller and narrower trees. This will involve the study of mature specimens and the selection of the shapes that fit the needs of the streets on which they are to be used. Then from these selected trees buds are taken and grafted onto seedlings of the same stock.

The use of smaller and narrower trees on city streets will put a higher stress on uniformity of size and shape. This method of obtaining desired planting stock will require the expenditure of money but the overall expense will be small compared to the cost of the system under which we now operate.

4. *Looks.*

I think that all will agree that street trees should and can be more interesting. The use of smaller trees will allow us to put more color along many drab streets. This can be obtained by flowers in spring and summer and by colored leaves in the fall. And the use of smaller trees will allow the better development of lawns and foundation plantings.

In the northern states street trees are bare for about six months out of the total of twelve. This means that we should crowd as much color as possible into the six leafy months. We have been taught that the use of plants with colored foliage is a vulgar habit but I am beginning to question the validity of this teaching. If we can get a lot of color into our drab streets by the use of small golden leaved elms and other such trees I can see no good reason why we should not use them.

Our smoky northern cities prohibit use of evergreens for winter interest and for those months we will have to depend on small trees that have beauty and grace in their shape and branching. Anyone who has studied the hawthorne in winter knows that this is a problem that can be worked out.

5. *Base Development*

One of the quietest but most persistent conflicts in cities is that between street trees and sidewalks. In Toledo, and probably in most cities, the street trees are always on the losing side. Three years of watching the conflict in Toledo has convinced me that trees with wide spreading bases can not be used on the general run of streets where the space between the curbs and the sidewalks seldom runs to eight feet and is usually five feet or less.

This may seem a trivial thing to some people but here in Toledo we have twenty thousand street trees that have raised the sidewalks and drives. The only solution offered, so far, is to cut the roots. This results in rotted bases weakening the whole structure and making them an easier prey for the summer storms.

This again involves the restudy of trees. However, it will be worth the effort if we can give the trees a helping hand in their hard fight with the sidewalks.

LEAF AREAS—

According to *Popular Science* magazine for November, 1949, a sugar maple tree 50 feet in height with a 15" diameter breast high, has 162,500 leaves with photosynthetic area of 14,930 square feet, or 13.2 square inch surface per leaf.

On September 16th, 1949, the writer made careful measurements of leaf areas of different species in Stamford, Connecticut, with the following results:

Norway Maple	25.855 square inches
Red Oak	19.09 square inches
Hickory	17.51 square inches
Ash	7.47 square inches
Dogwood	5.79 square inches
Elm	5.57 square inches

Simple measuring will prove that 25.855 square inches is too large for the average maple leaf and that the POPULAR SCIENCE figure is more nearly correct.

—Edward A. Connell
Stamford, Conn.

Ancient Trees of Kew Gardens

No. 1—GINKGO BILOBA

By W. M. Campbell
Curator Royal Botanic Gardens, Kew, England

It is remarkable how some trees by their unique appearance and distinctive characters, impress themselves on the minds of the general public, and of the nearly 2,000,000 people who flock to Kew each year, many more are acquainted with the Maidenhair tree than they appear to be with some of their own native species. The familiarity thereby noted finds practical expression in gardening circles, and though it is right to state that few of the old and lovely gardens of England are without their representative specimen on the lawn, one will find, if a tour is made of both the City of London and the suburbs, that the tree is very well represented in the small suburban garden as well as in the large.

Garden writers suggest that this and that condition is most favourable for the successful cultivation of this tree, but oddly enough very few exotics are more adaptable to the extremely difficult climatic conditions to be found in this country. Deep, well drained, rich soil will always give the best results, but even in the light sandy and gravelly soils found in many parts of Great Britain, the tree thrives exceptionally well and if anything colours much better in autumn because of the rather adverse conditions.

Although Ginkgo biloba was first introduced into Europe in 1730, it was not until 1754 that it first came to England. Here, strangely enough, it flowered in Europe for the first time, just over 40 years from the time it was first planted. The whole of the trees first introduced into the country were male trees and it was not until 1814 that female flowers were reported by De Candolle on a tree growing near Geneva. To some extent this explains why 50 years ago it was not usual to find the Ginkgo fruiting in this country. Little by little, female trees have been planted and female branches grafted on to male trees so that it is not now uncommon for good fruits to be borne. The fruit is of interest because the kernels are reputed to be edible and to have been sold in market towns in both China and Japan. They are said to promote digestion and to offset the ill-effects of wine drinking, and were also eaten roasted at feasts and weddings, the shells being dyed red.

As one would expect, a plant of this kind is quite easily raised from seeds which retain their viability for many months. Today, propagation is, therefore, carried out chiefly by seeds and when not available by grafting, layering or cuttings. In the case of the female tree grafting is the method most used. Records show that fairly large trees have been moved with ease, and in the case of the nurserymen, this is one aspect of its cultivation which is very acceptable, as the chances of failure by amateur planting are, therefore, greatly lessened. Like many other trees of this kind, planting should be carried out as soon after leaf-fall as is possible, or alternatively in early spring as growth is about to take place.

The tree shown in the enclosed illustration was planted at Kew in 1762 and latest records show that it has now attained the height of 71 ft. and a girth of 13 ft. 9 in. Originally the tree was deemed to require protection, and in its early days was trained upon a wall which stood in this area. It would be impossible, in the early days of its growth, to have restrained its natural vigour and not many years would elapse before it would tower well above the height of any such protection. This particular specimen has formed two main stems, forking at a height of about 5 ft. from the ground. This has resulted in a certain weakness taking place in the crotch, and for some years now a vigilant eye has been kept upon the tree to ensure that no wounds are allowed to become deep-seated and so weaken this fine specimen. In this particular position only 7 or 8 in. of soil exists above the sand and gravel which go to form the sub-soil, and there is no doubt that though the dry conditions in hot summers favour the development of both flower and fruit and also of good autumn colour, the general health of the plant can never reach its maximum with the low rainfall common at Kew, coupled with the natural damp atmospheric conditions in winter which arise with the

(Continued on page 16)

Photo courtesy the author
Magnificent Ginkgo planted at Kew in 1762.

NAA NEWS

By PAUL E. TILFORD, *Secretary*
Box 426, Wooster, Ohio

Shade Tree Public Relations

At the 25th National Shade Tree Conference held in late August in Baltimore, Mrs. Garrett Smith of Plainfield, New Jersey, gave an excellent talk entitled "Planning for More Effective Public Relations." The discussion which followed Mrs. Smith's talk was convincing evidence of intense interest and of recognition of the need for effective shade tree publicity.

Most people like trees. They generally do not need to be educated to plant shade trees; very often they plant too many. People need to be taught what kind of trees to plant in particular locations and then understand that trees require some intelligent care. Teaching the public is no easy job. But until the mass of people knows more about trees there will not be adequate support for good city shade tree programs and the average citizens, whose combined voices are the loudest, will continue to plant, or force city officials to plant large growing maples, sycamores, even boxelders and catalpas, 20 feet apart in narrow tree strips and expect them to develop into things of beauty requiring no care. People think that is the right way to plant trees.

Progress is being made in developing intelligent shade tree programs in some cities, but it is slow. A look at city shade trees around the country shows many of the same old mistakes being committed today that were made fifty years ago. This is usually not because the official in charge does not know better, but is because the public will not support any other program.

Yes, there is a crying need for effective public relations, public education, or whatever else you want to call it with respect to shade trees and their care. But I sometimes wonder if there is not more truth in the old saying—"You can't teach an old dog new tricks"—than we like to admit. Maybe it is wishful thinking to believe that the present voting generation can be brought around to supporting a satisfactory shade tree program. Maybe we should do what we can with the oldsters, which is what we are now doing, and educate the on-coming generation so that they will correct the mistakes of their fathers.

Here is what I have been leading up to. A few weeks ago it was my privilege to witness what I believe to be the most effective public relations program on shade trees that I have ever seen. This program is in Omaha, Nebraska, and is being carried on by the park department under the supervision of Frank Pipal, City Forester of Omaha. There are 28 Junior Forester clubs in Omaha including over 1800 school children of the 6th and 7th grades of the city's public schools.

Mr. Pipal took me to Bancroft School to attend a Junior Forester club meeting at 10:30 in the morning. We took with us a small elm sapling which was set on a base for that purpose in the classroom. The club president called the meeting to order and called on Mr. Pipal. The lesson was on pruning. Members of the club of the previous year listed on the blackboard the 10 commandments for pruning. These were as follows: 1. Remove low-hanging branches; 2. Remove broken branches; 3. Remove the poorest of rubbing branches; 4. Remove branches interfering with wires, buildings, etc. 5. Remove dead branches; 6. Remove disease and insect infested branches; 7. Prune to properly shape crown; 8. Remove all suckers; 9. Remove all stubs; and 10. Paint flush cuts. Slogan for pruning "Never leave any stubs."

A lively, but orderly discussion followed as to how the tree we had brought into the classroom should be pruned. Frank had made sure there were some low, broken and interfering branches. When it was finally decided which branches should be removed, practically everyone in the room volunteered to do the job. A 6th grade girl undercut a 1-inch low branch and then sawed it through from the top. A boy finished the job and left a nice flush cut. Another boy took the snips and removed the broken branches. Finally the arborist of the club inspected the job and then a girl painted the wounds with tree paint.

We went to another school and took a young hackberry tree with the roots on it. There were 125 pupils at this meeting. You could have heard a pin drop. I never believed that teen-agers could be so intensely interested in anything. The meeting was conducted strictly according to Roberts' Rules of Order. The Junior Foresters' Creed was repeated in unison and from memory:

"As a Junior Forester—I believe that trees are one of Nature's best gifts to humanity and deserve our effort to preserve them.

"I will always avoid bruising, breaking or otherwise damaging trees and will try my best to keep others from doing the same, whether it be around my home, on the streets, in the city parks, or elsewhere.

"I will try to keep the trees properly pruned, kept free from insects and diseases.

"I will study and learn all I can about trees and the proper care of them so that I can do my part in beautifying not only my home, my school and neighborhood, but the entire city in which I live.

"I will share my knowledge with others whom I will try to interest in good tree culture and care."

How a tree grows was the subject of the lesson. What the roots, the trunk and leaves do was discussed. The older members of the club knew and the younger ones were anxious to learn. A transcript of the discussion would have been good enough to go in the National Shade Tree Conference proceedings.

You might think these youngsters would try to prune the trees at home and fall and get hurt. I didn't hear of any such accidents. They do go home and convince dad that he should engage an arborist to prune the street trees in front of their house. They have literally jumped on line clearance crews when they thought the trees were being abused and have reported such cases to the city forester. And there just is no vandalism involving trees on Omaha city property. They have interested Service Clubs, Garden Clubs, Merchants' Associations, P.-T.A groups and other organizations in backing their projects.

Please don't think all the tree problems of Omaha have been solved. That certainly is not the case. But a great deal of interest has been aroused in trees and many concrete results attained by Frank Pipal and his able assistant Mrs. Pat Boord through their Junior Foresters in a location not ideal for growing trees.

Some other communities are finding that teaching the younger generation about trees brings results. Roberts Mann, Superintendent of Conservation, Forest Preserve District of Cook County, Illinois, told the 24th National Shade Tree Conference at Milwaukee what the Chicago area is doing in presenting nature study in their schools. I am inclined to agree with Mr. Mann when he said, "I Tell You We Ain't Been Doing Right By Our Little Jack and Jill." Hitler indoctrinated the young generation and he caused quite a stir even though he was crazy. Maybe we will have better shade tree programs sooner if we give more attention to training those who will vote tomorrow.

The Arborists Clinic

Why Shave 'Em?—

By Carl Fenner
City Forester, Lansing, Mich.

This is going to be a very short treatise, because if the photos fail all words of mine would be futile. In fact many enlightened and artistic folk will be unable to see the necessity for this discourse. I should also like to take that attitude, but cannot because there are far too many shade tree men in both public and private service who apparently still fail to recognize the aesthetic value of elm "whiskers." See Photo 1.

Some elms, like some races of men, seem unable to grow whiskers—more's the pity! Some elms (Photo 2) are shaved, or robbed, or "skinned" out of their beautiful trunk adornment of sprouts, "feathers," or "whiskers" by tree workers with barber emulating tendencies. Why? We don't know! Do you? Never mind—it really doesn't matter. What does matter is that we take more pains to educate our tree workers in regard to this comparatively small but important idea. Tell them something like this—while most elms are beautiful, the better shaped elms are more beautiful even with naturally bare trunks and limbs, but these same specimens are so very much lovelier to behold, more satisfying and pleasing to our sense of the artistic if clothed in abundant and "carefree appearing" foliage. Let's accept every opportunity to protect and encourage the tendency of some of the American elms to produce heavy trunk foliage adornments!

This elm agrees with Fenner

This elm reads "Burma-Shave" ads

Dear Mr. Scanlon:

Enclosed is a three-year renewal to your timely magazine.

Of special interest to me was the article on Oak Wilt in the September-October issue, since there has recently come to my attention a small somewhat isolated oak grove in Columbus with dying oaks in the concentive pattern, and with the typical symptoms produced by *Chalara quercina Henry,* for which no other causative factor can be adduced.

Since this is several hundred miles from any known infestation, and the area escaped critical notice until late fall, it is too early to be positive that this is the correct diagnosis, especially as there is as yet no confirmation by laboratory cultures; but the area will be carefully watched next season.

Here, at the lower edge of the fall line, we have eleven geological formations; some thirty different soils with their consequent forest association, ranging from hydrophytic to xerophytic; and some forty-five oak species and spontaneous hybrid forms, all within a radius of less than twenty miles. So an outbreak of oak wilt could be very serious.

The trees affected to date are typical spontaneous hybrids of *Quercus nigra L., X Quercus falcate Maclex;* and *Q nigra L X Quercus pagadaefolia Ashe.* Some *Quercus phellos L.* is present; but it is uncertain whether the top dying of this species is pathological or the result of late summer drought.

Should any definite confirmation of the disease in these species; or new disease locations nearer than the present known one in Western Tennessee come to your attention, it would be greatly appreciated if you would pass the information along.

Very truly yours,
Paul Borger,
Columbus, Georgia.

Dear Sir:

Please enter my subscription to your Journal, TREES, using my home address. As a former tree surgeon employed by a utility company to do line clearing, I have found it difficult to keep abreast of things that are happening elsewhere among tree lovers and those who are actively engaged in the care of trees.

Herbert Gross of Columbus, Ga., introduced me to your magazine, and I feel sure that future copies will be as interesting and instructive as the ones which he passed along to me.

Sincerely,
Jo W. Donaldson,
Augusta, Ga.

CALENDAR OF EVENTS

Jan. 4-6—American Association of Nurserymen, Eastern regional meeting, Hotel Statler, N. Y.

Jan. 15-17—Executive Committee, American Association of Nurserymen, Hotel La Salle, Chicago.

Jan. 23-25—Short Course for Arborists, Nurserymen and Landscape Gardeners. Neil House, Columbus, Ohio.

Jan. 26-27 — Ohio Nurserymens Association, Neil House, Columbus.

Jan. 25-27 — Indiana Arborists Conference. Purdue University, Lafayette, Ind.

Feb. 15-17 — Midwestern Chapter, National Shade Tree Conference. Hotel La Salle, Chicago.

Ohio Short Course and NSTC.

21st Annual Short Course for Arborists, Landscape Gardeners and Nurserymen

Neil House, Columbus, Ohio

Short Courses arranged by the Department of Agriculture, Ohio State University. Program for Arborists day arranged in conjunction with the Ohio Chapter, National Shade Tree Conference.

Monday, Jan. 23—Arborists Day

A. M.

10:00-11:15 — **Liquid Fertilization of Shade Trees**
The Scientific Approach, Alex Laurie, Dept. of Horticulture, Ohio State University. The Arborist's Conception and Practice, Norman Armstrong, White Plains, New York.

11:15-12:00—**Experiences with Summer Transplanting of Shade Trees.** Theodore F. Mathieu, School of Arboriculture, University of Massachusetts, Amherst, Mass.

1:30-2:00—**Prevention of Fruit Set on Some Ornamental Trees.** Richard Miller, Boulevard Gardens, Columbus, Ohio.

2:00-3:30—**Insects and Diseases of Elms and Oaks. Some Troublesome Insects and Their Control.** George S. Langford, Dept. of Entomology, University of Maryland, College Park, Maryland.
Decays and Some Other Diseases. R. R. Hirt, New York State College of Forestry, Syracuse, New York.

3:30-4:15—**Leaf Diseases — Parasitic and Non-Parasitic.** Forrest C. Strong, Dept. of Botany, Michigan State College, East Lansing, Michigan.

4:15-5:15—**Arboriculture Clinic.** In charge: Paul E. Tilford, Executive Secretary, National Arborists Association, Wooster, Ohio.

Evening—

6:30—Dinner, Neil House.

7:30—**Ornamental Trees — Adaptability to City Conditions.**
Panel Discussion.
In charge: Edward H. Scanlon, Commissioner, Div. of Shade Tree, Cleveland, Ohio.
Others: L. C. Chadwick, Dept. of Horticulture, Ohio State University. J. A. Sweeney, City Forester, Toledo, Ohio.
J. C. Kenealy, Ardmore, Pa., and Carl Fenner, Lansing.
Business meeting, Ohio Chapter, National Shade Tree Conference.

Tuesday, Jan. 24—Landscape Gardeners' Day.

A. M.

9:45-10:30—**Have You Tried These Herbaceous Plants.** Victor H. Ries, Dept. Hort., Ohio State University.

10:30-11:15—**Rhododendrons and Azaleas.** Henry T. Skinner, Morris Arboretum, Philadelphia, Pa.

11:15-12:00 — **Some Problems in the Establishment and Maintenance of Turf.** Harold W. Glissmann, Supt. Grounds, Father Flanagan's Boys' Home, Boys Town, Nebraska.

P.M.

1:30-2:30—**Design for the Small Home Site.**

2:30-3:30—**Landscaping the Ranch Type House.**

3:45-5:00—**Landscape Clinic.** In charge: Victor H. Ries, Dept. of Hort., Ohio State University.

Evening

7:30—**Some New or Preferred Varieties of Trees and Shrubs.** Henry T. Skinner, Morris Arboretum, Philadelphia, Pa.

Wednesday, January 25—Nurserymen Day.

A.M.

9:45-10:30—**The Importance and Interpretation of Soil Tests.** Ray Hasek, Dept. of Horticulture, Ohio State University.

10:30-11:00—**Cleaning and Processing Seed.** B. G. Smith, Supt. of Horticulture, Ohio State University.

11:00-12:00—**Storage for Nursery Stock.** J. H. L. Truscott, Horticultural Experiment Station, Ontario, Canada.

P.M.

1:30-2:15—**Report on Some Nursery Research Problems at Ohio State University.** L. C. Chadwick, Dept. of Horticulture, Ohio State University.

2:15-3:00—**Investigations of Nursery Insects During 1949.** R. B. Neiswander, Dept. of Entomology, Ohio Agricultural Experiment Station, Wooster, Ohio.

3:15-4.00—**Propagation Practices.** James S. Wells, Manager, Koster Nursery, Bridgeton, New Jersey.

4:15-5:15 — **Nursery Clinic.** In charge: L. C. Chadwick, Dept. of Horticulture, Ohio State University.

Nursery Research

Heeling-in Nursery Stock

One of the research projects financed by the Research Committee of the Ohio Nurserymens Association is reported here. The work, six projects, was carried on at Ohio State under Dr. L. C. Chadwick, Professor Alex Laurie and Everett Janne. Contributors to the search fund receive the results of all experiments. Contributions may be sent to John D. Siebenthaler, Sec. O. N. A., 3001 Catalpa Drive, Dayton, Ohio.

Project No. 6

Heeling-in Nursery Stock

A total of 18 different materials or mixtures were tested to determine their suitability for use as mediums for heel-in nursery stock and plunging potted plants. The materials tested included the following:

1. Bank sand 7.5*.
2. ½ soil and ½ sphagnum peat 6.2.
3. ½ Sphagnum peat and ½ shingle tow 4.3.
4. ½ Soil and ½ Vermiculite 6.6.
5. ½ Shredded bark and ½ bank sand 6.4.
6. ½ Old sawdust (hardwood) and ½ bank sand 7.1.
7. ½ Fresh hardwood sawdust and ½ bank sand 7.3.

(Continued on next page)

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8. ½ Sphagnum peat and ½ wood shavings 4.3.
9. ½ Vermiculite and ½ bank sand 7.1-7-6.
10. ½ Vermiculite and ½ wood shavings 5.1-4.9.
11. Shingle tow 4.2.
12. Sphagnum peat 3.9.
13. ½ Bank sand and ½ sphagnum peat 6.7-7.1.
14. Michigan peat 4.0.
15. New sawdust (hardwood) 5.4.
16. ½ Bank sand and ½ Michigan peat 6.2.
17. Ground corncobs 5.2.
18. Old sawdust (hardwood) 5.8.

*Number following the materials used is the pH of the mixture. Where two numbers are used it indicates a change in pH from early summer to fall.

The plant materials used in these beds were:

Evergreens—Taxus cuspidata (balled and burlapped).

Deciduous Shrubs:

a. Roses—"Sister Therese" (Potted) No. 1 Rose plants used.

b. Syringa vulgaris (seedlings) (bare rooted) 2′ - 3′.

c. Cornus alternifolia (bare rooted) 6′ - 8′.

d. Berberis thumbergi c Truehedge (bare rooted) 2′ - 3′.

Perennials:

a. Garden chrysanthemums-Var. "Irene" (Potted).

b. Dicentra exima (potted).

The plants were heeled-in or plunged in the mediums in April and May and carried through the summer. A second was maintained as to the number of times the various beds required watering throughout the summer. A shade of surplus army mosquito netting was stretched over the beds to reduce the light intensity.

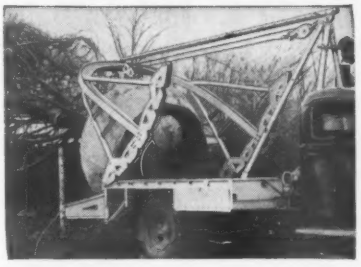
From the observations made this past summer, the fresh wood products such as sawdust, shredded bark, shingle tow, and various mixtures containing these ingredients, were not suitable for heeling in nursery stock. They required more watering, dried out faster, and the plants in general were in poor condition. The leaves on the deciduous plants in these beds were small and chlorotic and there was very little terminal growth on most of the plants including the Taxus plants.

The lilac plants grew best in the mediums which had a neutral or slightly alkaline reaction. The lilac plants in the following mediums were in excellent condition: Sand, Soil and Vermiculite, Sand and Old Sawdust, Vermiculite and Sand, Sand and Peat, and Michigan Peat and Sand.

The dogwood plants were in poor condition regardless of the medium used. This was probably due to the period of extreme temperatures encountered sev-

(Continued on next page)

New Rocker Mover Handles Big Trees Easily



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LOMBARD GOVERNOR CORP.
ASHLAND, MASSACHUSETTS

eral days after they were heeled-in the beds. Those growing in the shingle tow bed and in the old sawdust did have excellent root systems. Oddly enough the dogwoods in the shingle tow bed were in the best condition of any of the dogwoods and also was the only type of plant tried that do best in this medium.

The mums grew well in all the mediums except the fresh wood products or mixtures containing fresh wood products. The mum plants growing in ground corncobs were rather chlorotic in appearance.

The Taxus plants appeared to be least affected by the type of medium used, still there was less growth on the plants in the beds containing fresh wood products than there were in the others.

An application of 4-12-4 fertilizer at the rate of 4 lbs. per 100 sq. ft. was applied to the beds about every 3-4 weeks throughout the summer. Despite the application of the fertilizer the Nitrogen, Potassium, Phosphorus, and Calcium levels of the mediums was extremely low. The only exception was the mixture of ½ sand and ½ peat which had an adequate concentration of these four elements according to the soil test made August 22. The plants which were heeled-in bare rooted in sphagnum peat and in Michigan peat had poorly developed root systems whereas those in the mixture of sand and peat (either sphagnum or Michigan) had excellent root systems. The latter was also true in the bed containing bank sand. It was much easier to pull the plants out of the sand and peat mixture than out of the sand.

Ground corncobs were not satisfactory as a medium. The medium was always soggy and wet. Due to the rapid decomposition of the corncobs the nitrate level was extremely low. The plants in most instances were rather chlorotic probably due to the low nitrate level.

The mediums containing Vermiculite had a tendency to pack rather badly when walked on while handling the plants.

On the basis of this study it would appear that sphagnum peat and sand, Michigan peat and sand, bank sand, rotted sawdust or rotted sawdust and sand were probably the most satisfactory mediums for heeling-in or plunging nursery stock.

Trees of Kew

(Continued from page 11)

proximity of the gardens to the river. Those acquainted with London fogs will appreciate to the full how very difficult it is for plants of this kind to thrive successfully. It is, however, well to point out that no other tree seems better suited to town conditions, and in this respect the fact that the tree is deciduous must play an important part.

As one would anticipate, the name Maidenhair tree is derived from the similarity of the leaf to the pinna of an Adiantum fern. The leaves vary considerably in size and shape and on the drier soil of Kew it is noticeable that they do not grow to as large a size as those in more favoured localities. Many varieties of the tree have appeared in cultivation, including a golden variegated form, a large leafed form called macrophylla laciniata, a pendulous form and also a fastigiate form. None of these are equal to the type, and though they may have their place in a botanical collection, they are not really worthy of cultivation in good gardens. It will be seen from the measurements given that many finer specimen trees are to be found on the Continent, and that to do Ginkgo biloba justice it requires rather hotter summers and colder winters than are customary in Great Britain.

The timber of the trees is of no great importance, being finely grained and yellowish in colour. In many respects it resembles that of the Maple, and has been used for making chess boards and chess-men and as a ground work for lacquer-ware.

The tree is without question distinct from all the rest of the Coniferae, and it is fitting that it should be the only species of its genus. In a fossil state it is well represented and is the last representative of a race of trees that in the earlier stage of the world's history, filled an important part in its vegetation.

Trees Cut Down; Publisher Sues

Rockville, Md. — Williard M. Kiplinger, publisher of *Kiplinger Letters* and the Kiplinger magazine, *Changing Time*, is seeking $40,000 damages from a Clarksburg barrel stave company which he says cut down 40 of his white oaks.

The publisher was joined in the proceedings by Mrs. Aileen G. Wrightson, of Chevy Chase, who seeks $36,000 for 60 trees she contends the company took from her property.

Both suits against Clarence Brady and H. B. McLaughlin, co-owners, were filed in Montgomery County Circuit Court.

Kiplinger said the trees, most of which were 200 years old, were cut down and hauled away last spring.

Chas. Young,
Baltimore.

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Connecticut Arborists Spike False Propaganda

The Charge

Monday, May 9, 1949

Tree, Grass Spray Poisonous to Pets Veterinarian Says

Spring spraying of trees and grass has already brought needless death by arsenic poisoning to dogs and cats in Stamford, veterinarian Dr. M. H. Ryan said today. He charged tree spraying companies with carelessness in not posting contaminated areas.

To warn against the danger, the Stamford shelter of the Connecticut Humane Society has begun distributing foot-square signs to residents whose trees or shrubbery has been sprayed.

Available to any who ask for them, the signs read: "Attention! Pet Owners —Trees and grass sprayed with arsenate of lead which is POISON to animals."

Dr. Ryan said "a lot" of arsenic poisoning cases have been occurring in the past two to three weeks. Nearly 20 pets have been brought to his laboratory alone, he revealed. Of those, roughly half have died from the arsenic compound.

Rain Removes Danger

The deaths could be prevented if neighbors are warned when trees or grass are sprayed, he said. Dogs and cats could then be shut up until the first heavy rainfall, when danger from the spray is eliminated.

Arsenic compounds have a sweetish taste to animals, Dr. Ryan said. Dogs will lick it from their paws after walking across contaminated grass, or will eat the grass itself. The resulting poisoning works slowly. There may be no noticeable effect for two or three days, but meanwhile the dog is "being burned out inside."

"Tree companies have been a bit careless," he charged. "Often they spray an area and then drive away, leaving no notice that the poison is there."

His statement was brought forth after Greenwich Dog Warden Earle H. Scofield said Saturday a majority of Spring poisoning cases are caused by decayed matter which pets dig up, and not landscape sprays.

"Tree and grass sprays can definitely cause sickness and death to even the largest animals," Dr. Ryan pointed out. "There is no sense in minimizing the danger."

Stamford's dog warden, Edwin B. Schwimer, was not available for comment this morning.

The Facts

State Agents, Tree Firms Hit Veterinary's Charges

The State veterinarian, the State chemist, the Connecticut Tree Protective Association and the Bartlett Tree Expert Co. today took issue with veterinarian Dr. M. H. Ryan who charged that spraying of trees and grass this Spring has resulted in arensate of lead poisoning of dogs and cats in the Stamford area.

Dr. Ryan said on Monday that of nearly 20 pets brought to his laboratory the past two or three weeks, half died from arsenate of lead poisoning, due to "careless spraying by tree companies."

Dr. George Cowin, State veterinarian, said at Hartford: "I have never yet heard of a dog or cat being killed by arsenate of lead poisoning as a result of tree spraying."

Dr. Harry J. Fisher, State chemist, said at New Haven, where autopsies are performed on animals suspected by vetinarians and others of being killed by poisoning: "During 1949 arsenic has not been found in any animals examined by us."

Dr. F. A. Bartlett of the Bartlett company said that in his 40 years' experience in the tree care field, during which he has observed thousands of tons of arsenate of lead used, "not one case of poisoning of a dog or cat by this insecticide from tree spraying has ever been reported."

At Stepney, Conn., Wm. Luckner, president of the Connecticut Tree Protective Association which has more than 200 members and represents tree companies throughout the State, called the veterinarian's accusations "grossly misleading." Dr. Ryan's statement, said Mr. Luckner, "is unfair, unjust and damaging to tree men in Connecticut who exercise caution in spraying and other tree work."

Mr. Luckner also quoted LeRoy Chapman of the Fairfield County Farm Bureau as saying he had never heard of a cat or dog having been killed by arsenate of lead from tree spraying.

Dr. Corwin's statement was given to Dr. Bartlett Wednesday after both the Connecticut Tree Protective Association and the Bartlett company attempted to determine whether the purported finding of Dr. Ryan had been confirmed elsewhere.

"In order to confirm his findings," the State veterinarian said, "Dr. Ryan should submit vital organs — stomach, liver and intestines to Dr. Fisher for analysis."

Dr. Corwin said that he knew of one case of a death of a dog due to arsenic poisoning, but "that was traced directly to rat poisoning."

Replies to Charges

Dr. Fisher's reply to the Stamford veterinarian's charges were made in a letter received by Dr. Bartlett Wednesday from the Connecticut Agricultural Experiment Station. It said:

"This station tests considerably more than 100 autopsy specimens of animals each year that are submitted by veterinarians and others in cases of suspected poisoning. So far as I know this is the only laboratory in Connecticut experienced in toxological examination that handles animal cases.

"It is not possible to diagnose arsenic poisoning conclusively without a chemical analysis. During 1949 arsenic had not been found in any animal examined by us.

"During 1948 six cases of arsenic poisoning were found, but five of these were cows or calves; in only three of these was the arsenic present in the form of arsenate of lead, and one of the lead arsenate poisoning cases was definitely not due to a spray but to a heifer eating from a drum of straight lead arsenate.

"One Irish setter did die from lead poisoning in Newington in February, 1948; the time of year obviously precludes the possibility of the dog having been poisoned by spray residue from a tree.

"In my judgment it would not be possible for a dog or cat to consume a toxic dose of lead arsenate by licking its paws after walking through grass beneath a sprayed tree."

It was Dr. Ryan who charged that dogs and animals pick up lead arsenate by walking over newly sprayed areas, then licking their paws because arsenate of lead has a sweetish taste.

Dr. Bartlett said that tree companies in the Stamford area have not used arsenate of lead this Spring up until the day Dr. Ryan made his charges, except for fruit trees.

If arsenate of lead is as deleterious and dangerous to animals as Dr. Ryan reports," Dr. Bartlett added, "there would have been a law restricting its use long ago."

—These items appeared in The Stamford Advocate, Stamford, Conn.

—Along The *Buy*-Way—

Takeoff Chain Saw

Designed to fit the power takeoff of all tractors and jeeps, the new Von Ruden chain saw now being produced by Von Ruden Manufacturing Company of Claremont, Minnesota notches, fells and bucks extremely fast and cuts four logs or small tree limbs with equal ease.

The versatile Von Ruden chain saw operates efficiently in a vertical, horizontal or angular position. The new saw cuts at ground level, handles fallen logs quickly and swings easily into difficult positions with no belts or pulleys to catch on brush. Logs can be sawed from the top or bottom.

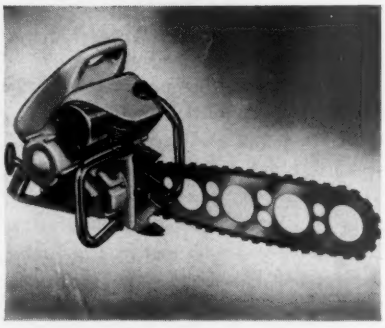
The new Von Ruden saw is easy to use, the operator merely guiding the chain with the easy-grip handle. The tractor or jeep carries the weight of the saw, eliminating all chain thrust. Weighing only 106 pounds, the Von Ruden saw has an automatic hook-up and locks securely in place for safe, fast transporting. Owners claim that the new Von Ruden saw cuts through a 30-inch oak log in just 30 seconds.

A special safety clutch on the Von Ruden saws protects both the saw and the operator. If the saw is pinched, the adjustable safety clutch releases the mechanism. If the saw encounters an obstruction, the saw is released before damage can occur. The special design of the chain assures ample sawdust carrying capacity, a feature not found on any other chain saw.

A folder describing the Von Ruden chain saw is available from the Von Ruden Manufacturing Company at Claremont, Minnesota.

New Light-Weight Chain Saw

One man can easily handle the new Model 3-25 chain saw just announced by McCulloch Motors Corporation of Los Angeles. Total weight of the complete saw, including blade and chain, is only 25 pounds, yet it develops a full three horsepower. This unique combination of light weight and ample power



should make the new McCulloch a welcome tool for all types of tree maintenance or removal.

Since this saw will operate at full power in any position or at any angle, and because it is so light in weight, it is an ideal unit for work up in a tree, as well as on the ground. Moreover, its portability lessens the time and labor formerly necessary to maintain or remove trees at locations that are difficult to reach.

Two straight-blade models are available, with 18 or 24-inch blades; a 14-inch bow saw, designed to cut small timber in any position or location without pinching or prying, is also available. Prices of the complete saw, f.o.b. the McCulloch Motors factory in Los Angeles, are: 18-inch, $295.00; 24-inch, $305.00; 14-inch bow saw, $315.00.

The primary mechanical features of the saw are, of course, its 25-pound weight and 3 horsepower. In addition, the Model 3-25 McCulloch is designed for convenience and engineered for satisfying operation. Hand grips are shaped and positioned to afford easy sawing in either vertical or horizontal position, right- or left-handed. The throttle is controlled by a trigger in the pistol-grip handle. The manually operated, built-in chain oiler is operated by a thumb button just above the throttle. Next to it is the primer for starting (no choking is required). No clutch control is needed, since it is fully automatic. For starting, a kickproof rewind starter is located near primer and throttle.

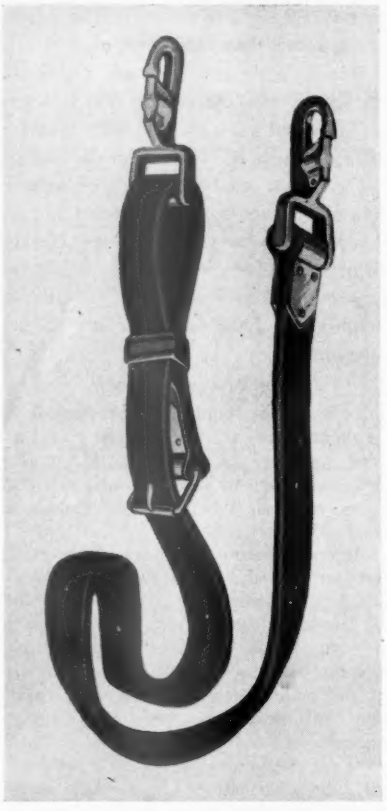
The ignition breaker points, which occasionally need inspection or adjustment on any engine, are mounted outside the engine in a dustproof case for easy accessibility. The air cleaner has a built-in brush for easy cleaning.

The power unit is used without modification on all three models of saw. It is a simple operation to change from bow to straight blade, or vice-versa. Various chains are available for most efficient cutting in all types of soft, hard, or frozen wood.

Nylon Safety Strap

Final tests have been completed on the first Nylon Safety Strap on the market, now in production by the Buckingham Manufacturing Co., Inc. of Binghamton, N. Y. The results of laboratory and field tests show exceptional qualities of strength, durability and flexibility in comparison with belts made from other fabrics and leather, according to Walter E. Craw, company president.

In this new Buckingham Safety Strap, multiple plies of nylon, specially woven from high-tensile fibres, are laid together in neoprene and vulcanized. This con-



struction achieves the desirable combination of pliability, ease of handling and lightness with strength.

Three times stronger than high quality harness leather, nylon also provides extreme resistance to abrasion. Even in severest cold, the strap keeps its flexibility. Since this strap is unaffected by any substance with which it might come into contact, extra long life and consequent reliability is assured, it is claimed.

Price of the new nylon safety strap is very little more than the price of straps made of ordinary fabric, Buckingham's announcement states.

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ESTERON 245 controls woody plants growing along roadsides and rights-of-way. Used alone or in conjunction with Esteron 44, Esteron 245 will control such resistant plants as brambles, osage orange, certain hawthorns and woody species including poison ivy.

SODIUM TCA 90% controls grasses such as Johnson, quack, Bermuda. Also kills annual grasses such as foxtail, chess and crab grass and promises effective control of prickly pear cactus and palmetto. At lower dosages, retards growth without killing, where a light grass cover is desired.

You will find it profitable to plan next season's spraying program around these outstanding developments of Dow research—Esteron Brush Killer, Esteron 44, Esteron 245 and Sodium TCA 90%. Used separately or in conjunction, they can help you maintain a right-of-way substantially free from weeds, woody growths and noxious grasses.

These effective products have been developed by Dow, major producer of result-getting weed killers—and *tested and proved* by Dow in cooperation with public utilities. They're easy to mix and apply—they're economical—and they show positive results.

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GREEN-up AMERICA

Propagation

(Continued from page 6)

no plants need be expected until after two seasons in the seed bed.

Seed propagation is vastly more important in producing trees for reforestation, windbreak, erosion control and wildlife than for shade trees. The trend in modern shade tree practice is to employ "clones," or the progeny of a single individual tree which has been propagated by vegetative means. The Moline elm, the Sentry sugar maple, the Column Norway maple, and the Siebenthaler honey locust are outstanding examples of what has been accomplished in clonal selection. These trees are not "true from seed" so must be propagated asexually.

Many tree species of more primitive characteristics may be propagated either by root cuttings or by removing the suckers which often arise from the roots of the plants. Some strains of the common black locust have this character but it is rare among those species commonly used for shade purposes. The age of the tree, particularly as regards the juvenile or mature condition, may also operate in the ability of a tree to regenerate from root cuttings.

The common honey locust *(Gleditsia triacanthos)*, is usually quite thorny in its younger stages. As the tree matures and grows older, the branches produced on the upward and outward portions of the tree are thornless. When scionwood or budwood is taken from these thornless branches and topworked on seedling understock, the trees remain thornless therever after. A plantsman can thus disregard the thorny condition when selecting any superior honey locust tree because it can be perpetuated from the thornless wood.

Certain seed strains of honey locust, usually called *Gleditsia triacanthos inermis,* produce seedlings ranging from 40 to 90 per cent thornless. There are, however, always some thorny trees produced out of each lot of seedlings. The thornless seedlings make ideal understocks upon which to bud or graft selected clonal varieties.

Both root cuttings and hardwood stem cuttings of ordinary thorny, and to all outward appearances, mature honey locust trees have been used with success to produce new trees which naturally maintained the thorny condition. It has, however, been very difficult to propagate the selected clones from hardwood stem cuttings irrespective of the age of the wood used for this purpose. Stem cuttings have been taken from sprouts produced on grafted and budded plants with little success.

Some few trees of the named varieties Calhoun and Millwood were produced by the writer from stem cuttings some years ago but root cuttings taken from these same trees year after year in succession have consistently failed. One can only conjecture that the thorny condition denotes the juvenile phase of growth which is rather easily propagated by either root or stem cuttings, while the thornless state is correlated with the mature phase which does not regenerate easily from cuttings.

Nurserymen differ in their choice of method of producing clones of honey locust, as well as of other shade trees. Grafting, either at the bench during the winter months, or later on in the field, will apparently produce a satisfactory number of trees. The growth from grafted plants, however, is meager as compared with that produced by budding, and the method is slower and more laborious. Graftage has another drawback. Weak unions, and even anatomical abnormalities due to incompatibility, may remain unnoticed for years and then very quickly cause the death of the tree.

The clones of most shade trees are now produced almost exclusively by budding. Many are grown in the Pacific Northwest where the climate furnishes a long moist growing season so that a tall slender straight stem is produced in one growing season. The seedling rootstocks are budded in August and the tops cut back just above the bud the following spring. If the shoot produced by the bud the next season is short, a terminal bud will be set, and when this grows out the second season, a crook or bend may occur in the trunk. This is very undesirable for shade tree purposes.

Some propagators cut the one-year budling back to a single bud at the end of the first growing season. The second-year shoot usually makes a much faster and taller growth resulting in a high-headed, straight-stemmed tree.

Many shade trees, as the maple and the honey locust, are moneecious with the staminate and pistillate blooms produced in separate flowers on the same tree. Usually there is a preponderance of either one or the other

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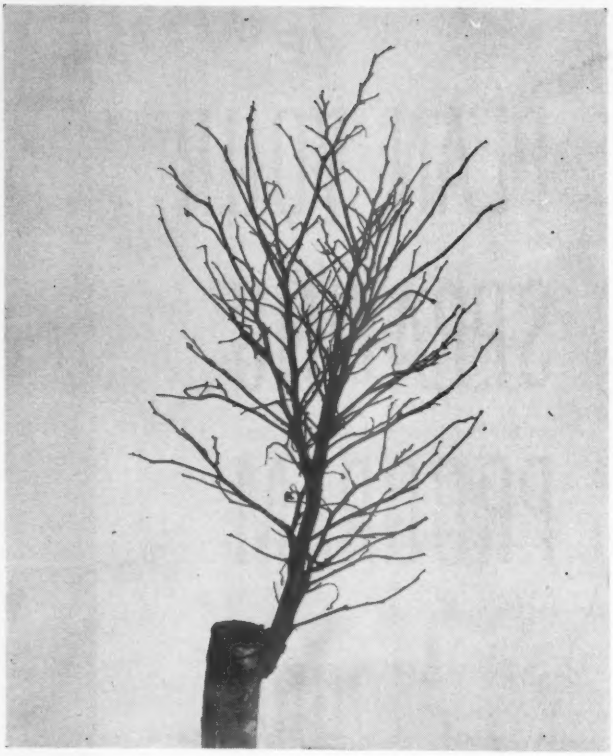

Photo courtesy Cleveland Div. of Shade Trees.
Side graft of Globe-head elm after first year of growth. Trees can be planted after second year. Tops are worked on six or six and one half foot standard.

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Why I Like the Elm

(Continued from page 8)

ever it grows, it has had an influence on the character of the community, and to the hard men who hewed out the nation and helped make it great.

Much of history has been made under the spreading shade of an elm. William Penn made his famous treaty beneath an elm tree. Washington took command of the Continental Army on July 3, 1775, beneath an elm—no longer living—at Cambridge, Mass. And only this year steps were taken to preserve the trunk of another elm at Tappan, N. Y., known as the Tar Barrel tree, near Washington's headquarters. From the lofty branches of this elm, smoke from a barrel of tar signalled the countryside that the War of the Revolution had ended.

Kennebunk, Maine, for years boasted of the Lafayette Elm, named in memory of the general who visited the house in whose grounds the tree stood. Perhaps the most famous of all American elms is the Wethersfield elm, at Wethersfield, Conn., now dying. Its trunk is 17 feet, three inches in girth, and it has a branch spread of 131 feet. One of the most majestic feelings I have enjoyed was to pause under its branches, then slowly pace around its mammoth flairing buttress roots. Man is but a Lilliput compared with the wondrous giants in the world of trees.

The American elm has grace and character. Its general appearance is vase-like. But there are three distinct variations or types. Most common is the round-topped crown formed by a number of ascending arms or stems ending in spreading branches, with delicate hanging branchlets.

A second type has massive widespread branches, giving a picturesque appearance in winter, an enormous mass of shade in summer. You have seen the type in a meadow, really awe inspiring.

The third is the wine glass form and so desirable on a lawn. It has comparatively few arms and varies slightly from the more common straight trunk types. It gives off spreading, hanging branchlets. It suggests an old fashioned wine glass with its feathery appearance.

The American elm, unfortunately, is subject to vicissitudes. And as a result many of our handsome old specimens are going. But I cannot agree that the elm is going completely, some day to be a memory or a legend to future generations.

The elm will be here for years and years to come. I say this with full realization of the toll the Dutch elm disease and phloem necrosis has exacted. But we must learn to live with the disease. We can save our elms, our priceless heritage. We can do it by sanitation, by keeping our trees healthy with proper spraying, feeding and pruning. We must do it.

No New England tree is more magnificent than the queenly elm. None perhaps deserves the research and care that is being given it in the battle to curb the Dutch elm disease. It is a noble battle for a noble tree. We will win it yet.

Propagation

(Continued from page 20)

sex. By close observation at blooming time, the propagator may mark such branches as bear only staminate flowers and later select his budwood from these areas. He will then produce trees which will bear only flowers and never produce fruit. An example is the Siebenthaler honey locust. In this particular tree there were no pistillate blooms, and this clone is absolutely free from the long twisted pods which are considered objectionable by some people.

As yet there has been little or no attempt to select dwarfing understocks for shade trees as has been done for apple and pear. This presents a wide-open field for both the trained observer and the geneticist. The possibilities seem unlimited in developing rootstocks which will create miniature editions of our stately elms, oaks, and maples. The dearly-beloved Mimosa tree of our Southland would have a worthy rival if a dwarfing rootstock were discovered for the honey locust. Other uses for rootstocks would be to widen the site adaptability of certain trees by budding on stock which showed unusual resistance to adverse growing conditions.

Propagation is an old art. Grafting was practiced by the Greeks and the Romans and probably by the Egyptians and the Babylonians. Many of the methods and practices have changed little throughout the centuries. The science of propagation, however, is rapidly developing. It is keeping pace with the progress made in related fields, such as plant physiology, histology and genetics. Better shade trees are being developed and these will be made available by the adoption of methods devised in modern plant research in propagation.

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The following books may be ordered from TREES Magazine, Box 5607, Cleveland, Ohio.

HUMUS AND THE FARMER, by Friend Sykes, Rodale Press Emmaus, Penn. 392 pgs., illus. $4.50.

Here is the fascinating story of a large farm successfully operated according to organic methods. With graphic descriptions and illustrated by 40 photographs, methods are given for the making of pastures, reclamation of waste or derelict lands, and increasing the water-holding capacity and productivity of the soil. The value of mixed farming and reforestation, the importance of the earthworm, and the mechanization of the compost method are explained in a clear fashion.

It all began when what was regarded as one of the best herds in England proved, upon government inspection, to be 66 per cent diseased—the result of deficiencies in the food plants. The herd was dispersed and the valuable farm land sold. Friend Sykes then purchased 750 acres of land on the Salisbury Plain which farmers round about considered practically worthless. He subsoiled it and fertilized with natural manures exclusively. Pasture and crop plants were grown which were rich in minerals and other nutrient materials. As a result, the cattle and horses were maintained in such health and vigor as had been hitherto unknown, and the land is now eagerly visited by outstanding agriculturists as one of the most interesting farms in the country!

Mr. Sykes places his essential acts of good farming in the following order of importance: (1) the four-year pasture, (2) good cultivation, including subsoiling. (3) organic manuring through the grazing of stock, and (4) composting. The details he gives of some of his scientific records on the farm are startling in their originality and intriguing in their indication of the inadequacy of orthodox methods. Chemical analyses indicated deficiencies in the soil, but did not indicate the rate at which the elements in the soil would become available for the use of the crops. The soil of one field which chemical analysis had showed to be deficient in lime, phosphate, potash, and nitrogen, produced—without the addition of any artificial manures—22 sacks of oats to the acre. This and other similar results demonstrate the effectiveness of the natural methods used by the author.

WORKING WITH THE MICROSCOPE. by Julian D. Corrington. McGraw-Hill Book Co., Inc., New York. 418 pgs. illus. $4.00.

Designed as a complete guide and reference work for those who wish to learn microscopy and micro-technique, "Working with the Microscope" not only tells the beginner how to use the instrument itself but gives complete instructions on the preparation of slides, or specimens, of every degree of difficulty from the simplest to the highly technical. Practically every type of subject and field of interest is treated—from microfossils to textiles, from pond life to photomicrography, from soils to sections. Every process is explained in clear, simple language. By following these practical directions, the amateur can train himself step by step in microscope technique, without outside guidance.

The book will be of interest to every amateur, hobbyist, and student—anyone except the advanced professional—who wants to learn something of this fascinating science. No other book covers all the fields here treated.

In addition to the material on the preparation of slides, the book contains useful information about the microscope and its accessories, new methods in microscopy, short cuts, and special problems. Full directions on the preparation and use of reagents, a list of sources of supplies, a bibliography, and reference tables are included.

The book is illustrated with more than one hundred photographs and line drawings.

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WOODY PLANTS OF THE WESTERN NATIONAL PARKS, by Virginia Long Barclay and Harold Edwards Bailey. The University Press, Notre Dame, Ind. 274 pgs. illus.

This book was designed as a guide to persons interested in the flora of all the western National Parks. It includes also the Lake Superior region. 16 parks were visited and studied by the authors in compiling this worthwhile manual.

Inasmuch as the book is meant for the amateur a glossary should have been included. A quite complete coverage of the subject, except trees which occupy a previous publication.

* * * *

MEMOIRS OF A ROSE MAN, by Dr. J. Horace McFarland. Rodale Press, Emmaus, Pa. 144 pgs. illus. $3.00.

It is eminently appropriate that the intimate stories of Breeze Hill, told by the late Dr. McFarland himself, be shared with his thousands of admirers in all walks of life. He recounts the circumstances which early in his life interested him in plants and in the description of plants with words and pictures. The story of Breeze Hill is in reality a somewhat detailed account of how the tail end of a vineyard was converted into a beautiful and yet simple garden of roses.

No one can read the author's chapters on the beauty of the climbing roses without learning many of the secrets enabling one to grow successfully these beautiful climbers. The rose supports described by Dr. McFarland are simple, practical, and permanent. The arrangement of the roses in the garden according to types and colors was found to be most effective, and at the same time it made possible an easy and valuable comparison.

The author seems to have shared his great love for roses with all kinds of hardy climbers. He was particularly fond of honeysuckle, clematis, wisteria, trumpet vine, silver lace vine, ivy, and virginia creeper. But he regarded the rose as the universal flower because it occurs naturally in all parts of the world and appeals to all kinds of people.

Dr. McFarland takes great pleasure in telling about the rose successes of Dr. Edmund Mills, who was a successful preacher. He writes of the dreams and fulfillment of the rose gardens on the grounds of Sing Sing and San Quentin prisons, where the roses not only beautified the grounds but radiated to inmates hope and spiritual healing. He relates the work of Dr. Walter van Fleet, a medical doctor who loved roses and devoted his time and talents to them.

"I am glad that a memoir of Dr. McFarland's life and work is to appear," writes L. H. Bailey in his preface. "It will keep his influence alive. He stood for every good thing."

* * * *

A SAND COUNTY ALMANAC, by Aldo Leopold. Oxford University Press, New York. 226 pgs., illus. $3.50.

There are two kinds of people: those who can live without wild things and those who cannot. These essays are the experiences and dilemmas of one who cannot. So wrote Aldo Leopold in the introduction to this collection of his writings, ranging from a brief description of a wild flower to a philosophical discussion of land conservation.

Aldo Leopold, one of the world's great naturalists, was a leader in the conservation movement. He also had the ability to express in words of exceptional beauty his appreciation of the way of life of all wild things. In this book have been gathered the best of what might well be called his prose poems.

The essays are grouped in three parts. Part I, 'Sand County Almanac,' is concerned with what Leopold did and saw at his weekend refuge on a Wisconsin farm.

Part II, 'Sketches Here and There,' recounts some of the episodes in his life that taught him, gradually and sometimes painfully, that few shared his concern for preservation of the land. These episodes, scattered over the continent and through forty years of time, show how and when he first encountered some of the issues that bear the collective label 'conservation.'

Part III. 'The Upshot,' expresses in logical terms some of the ideas whereby Leopold, as a dissenter, rationalized his dissent. In them he shows that the basic fallacy in conservation is the attempt to define it as merely good economics when it is much more than that; it is the extension of ethics from people to land. And until we love and respect there land, there is no chance for it to survive the impact of mechanized land-use or for us to reap from it the esthetic harvest it is capable of contributing to culture through science.

A Sand County Almanac will be a permanent delight to the reader who has a true appreciation for the land, who will relish the extraordinary information about the ways of nature with which the book is filled. To read these essays is to develop a deeper appreciation for the land and its wild life and a sharper eye and keener ear for its sights and sounds.

* * * *

THE GARDENER'S TRAVEL BOOK (Revised Edition), by Edward I. Farrington. Oxford University Press, New York. 278 pgs., illus. $4.00.

Completely revised and containing material that did not appear in the first edition, this practical guide to the gardens of the United States and Canada will be welcomed by those Americans whose love of gardens is equalled only by their love of travel.

This guide book is unique—it tells the garden lover where and when to go to see the things that really interest him. Gardens, landscaped parks, wild-flower displays, fruit-blossom and flower festivals, and flower exhibitions are all listed by states. All the necessary information is given, including when they are open to the public, the fees if any, what the distinctive features are, and in many cases (from the numerous illustrations) what they look like.

Even the person familiar with the countryside will probably find included in *The Gardener's Travel Book* beauty spots of which he had previously been unaware. All the facilities of the Massachusetts Horticultural Society have been used by Mr. Farrington in compiling this book. Field agents in every section of every state, and in Canada as well, combined their own knowledge with information gathered from garden clubs, chambers of commerce, local government agencies, and similar organizations. The result is not only a guide but a valuable reference book that will prove fascinating reading to the stay-at-home gardener as well as to his traveling colleague.

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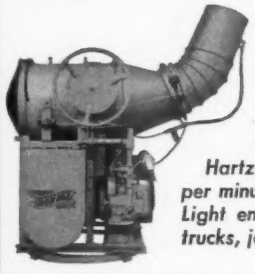

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